

and Saturn, may not also be diffraction phenomena originating in their own moist atmospheres, just as halos and other colored beams originate in the earth's atmosphere. The changes of tint on the surfaces of the clouds of Jupiter and Saturn occur at certain angular distances from the sun and earth, such as to make this suggestion worthy of special study. The elaborate works of Mascart, Pernter, and others on this subject must be studied by those who would go into precise details.—C. A.

THE EIGHTH INTERNATIONAL GEOGRAPHIC CONGRESS.

The report of the Eighth International Geographic Congress, held in the United States in 1904, has recently been published by the Government as Document No. 460, House of Representatives, 58th Congress, 3d session, Washington, 1905. In its wealth of geographic papers we find the following articles bearing directly upon meteorology:

Pages 246-265. Meteorological summary for Agaña, island of Guam, for the year 1902. By Dr. Cleveland Abbe, jr., of the U. S. Geological Survey.

Pages 266-271. A climatological dictionary for the United States. By Prof. A. J. Henry.

Pages 272-276. Scientific work of Mount Weather Meteorological Observatory. By Prof. F. H. Bigelow.

Pages 277-293. Suggestions concerning a more rational treatment of climatology. By Prof. R. DeC. Ward.

Pages 294-307. The Canadian climate. By Prof. R. F. Stupart.

Pages 308-321. The climate of Kimberley. By J. R. Sutton.

Page 322. A project for the exploration of the atmosphere over the tropical oceans. By A. Lawrence Rotch.

Pages 323-327. Antarctic meteorology and international cooperation in polar work. By Henryk Arctowski.

Pages 328-339. De la prédominance des tourbillons, en sens inverse des aiguilles d'une montre, dans les cours d'eau de l'Europe centrale et occidentale. By Jean Brunhes.

Pages 340-342. Rainfall with altitude in England and Wales. By William Marriott.

Pages 343-347. Climatology of the lowlands and watershed terraces of Natal. By Frederick W. D'Evelyn.

Pages 348-351. Aerostation associated with the study of geography. By E. V. Boulanger.

Pages 352-379. Climate of Pamplemousses, in the island of Mauritius. By T. F. Claxton.

Pages 380-385. Climate of Ts'aidam, in eastern Tibet. By A. Kaminiski.

Pages 386-392. Meteorology of Western Australia. By W. Ernest Cooke.

Pages 393-396. On the unsymmetrical distribution of rainfall about the path of a barometric depression crossing the British Isles. By Hugh Robert Mill.

Pages 397-406. Evidences of land near the North Pole. R. A. Harris.

Pages 408-424. (In German.) Winds and ocean currents. By E. Witte.

Pages 465-467. (In German.) Vertical motions of the earth observed by the trifilar gravimeter. By Dr. A. Schmidt.

Pages 468-477. (In German.) The foundation, organization, and problems of the International Seismological Association. By Dr. G. Gerland.

Pages 535-540. The form of the geoid, as determined by measurements in the United States. By John F. Hayford.

Pages 664-670. Climate and cult. By J. Walter Fewkes.

Pages 711-714. Color in the north and south polar regions. By Frank Wilbert Stokes.

Pages 737-740. The scientific results of the Russian expedition to Kham. By Capt. P. Kozloff.

Each of the items in the above list is worthy of a fuller abstract than we can give it. The volume can be easily obtained by application to any member of Congress, and should be in the hands of every teacher and special student.—C. A.

THE LEGITIMATE LINE OF DUTY.

During the month of March the Weather Bureau and other branches of the Department of Agriculture received from correspondents in several different States requests for authoritative replies to various questions which turned out to be identically the same, and many of which did not relate to the work of the Department of Agriculture. In some cases the questions came from teachers or scholars, in others from the

cooperative observers of the Weather Bureau. Our first temptation to answer these questions, as a kindness to our correspondents, was quickly modified by the consideration that as these all had a common origin they very probably related to some competitive or other civil service examination, with which it was improper for a Government bureau to interfere. Therefore in some cases the questions were not answered.

On further inquiry, however, the Editor discovered that these 27 questions emanated from a very enterprising manufacturer of pianos, or his business agent, who took this method of advertising his pianos. It is not often that the United States Government is made a party to any such advertising scheme, and it is earnestly to be hoped that in future struggles for a prize no observer or correspondent of the Weather Bureau will again attempt to enlist its kind offices.

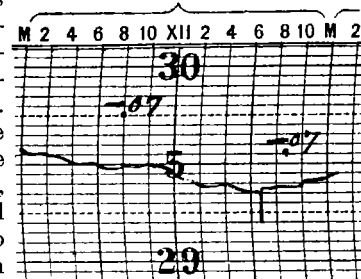
Several cases have come to the Editor's knowledge during the past twenty years in which Government officials have been requested to act as umpires or give authoritative decisions as to points under discussion. The Government was not established for any such purpose as this, and such correspondence will always remain unanswered as being outside our legitimate line of duty.—C. A.

THE TORNADO AT MERIDIAN, MISS., MARCH 2, 1906.

By LEE A. DENSON, Observer, Weather Bureau. [Extract from Form 1014 A.]

The tornado that visited Meridian on the evening of March 2 was the most destructive local disturbance ever observed in eastern Mississippi. Twenty-three people were killed, and it is estimated that the loss of property damaged or destroyed is about \$400,000.

The sky had been cloudy all day and occasional light showers occurred, the temperature being above normal, with maximum, 69° F., shortly after noon. A fresh breeze from the south and southeast prevailed, in connection with a large barometric depression that was moving eastward across the central portion of the country, but notwithstanding the breeze the atmosphere became oppressive and toward evening a heavy bank of dark strato-cumulus clouds was observed in the southwest, from the front of which occasional small streaks of lightning issued. Distant rumbling thunder was heard at 5:40 p. m. At 6 p. m. the clouds had assumed a very threatening aspect and rain began to fall at 6:05. There were frequent flashes of sheet lightning. About 6:20 p. m. a sound resembling the noise made by a fast moving freight train came from the southwest. The sound became louder and louder, attaining a terrific roar for a minute as the disturbance passed. All was quiet again at 6:30 p. m. The center of the storm passed 250 yards south of the local office of the Weather Bureau, moving a little north of east, at 6:26 to 6:27 p. m. The barograph pen dipped sixteen hundredths



of an inch and recovered immediately (see fig. 1); the temperature fell only 2° F. and recovered 1° F. within 10 minutes. At 6:15 p. m. the velocity of the wind was only 9 miles from the southeast; at 6:20 it was 16 east, backing to northeast at 6:22 and returning to east at 6:23 and to southwest a minute later when there was a marked increase in the velocity, the direction being south at 6:25, east at 6:26, and west at 6:27 p. m. The greatest velocity recorded was 64 miles from the east, as the storm passed. Immediately afterward the rate diminished to 36 from the west and 5 minutes later it was 12 miles from the southwest. This record clearly shows the inward rush of air toward the center of the storm.

FIG. 1.—Barogram at the office of the U. S. Weather Bureau, Meridian, Miss., March 2, 1906.

The following description has been carefully compiled from the reports of a number of reliable witnesses who observed the storm from points within 100 yards of the track:

A funnel-shaped, bounding cloud seemed to rise and fall with a darting, irregular forward movement. The lower end of the funnel reached within ten feet of the ground and appeared to be not more than six inches in diameter at a distance of 100 yards, but the upper portion was much larger. Many streaks of lightning were working inside like snakes of fire. The funnel appeared to be open at the top and a distinct glow was cast upward.

Several persons on both the north and south sides of the path state that they saw "small balls of fire" thrown out of the front and sides of the funnel, but none were observed in the rear. It should be stated that many small houses were destroyed in which large fireplaces were used. It may be that the "balls of fire" were due to burning debris lifted up and thrown off by the storm.

Light rain continued at intervals until 8:15 p. m., and again from 9:25 p. m. to 10:00 p. m. No hail was observed here, but hail was observed three miles southwest of the station. The temperature fell gradually during the night and the relative humidity the following morning was 53, an unusually low percentage for this section.

The path of the tornado was traced about eleven miles. Its average width was 150 yards, but the width wherein buildings were destroyed and trees uprooted in large numbers was not over 100 yards, except at a few places. The general direction was east-northeasterly, with slight variations from a straight course. Beginning at a point about seven miles southwest of Meridian the disturbance damaged and uprooted trees along a path 100 to 200 yards wide for one mile. It then lifted and was observed a mile west of Arundel Springs, in the form of a dark cloud moving northeastward. The first building destroyed was a barn one mile west-southwest of Meridian. From this point the path was practically continuous, though some property was only slightly injured, while other buildings were completely demolished. Approaching the city the cloud assumed a distinct funnel shape, and curved slightly eastward, damaging and destroying many small houses in that quarter of the town known as Fewell's Survey; turning slightly to the northward, it moved along and gradually crossed the New Orleans and Northeastern and the Alabama and Vicksburg railroad tracks, and unroofed the building of the Meridian Light and Power Company, thereby cutting off the electric light current. Here also the gas tank was raised momentarily; this had the effect of putting out the gas lights for about ten minutes. Moving eastward the tornado destroyed a freight depot, unroofed several buildings, and then reached the point of greatest destruction, completely demolishing every building in two blocks; but on reaching Lindley Hill the storm turned northeastward across Georgetown, and was traced beyond the city limits east-northeastward for two miles, where the path spread to half a mile and gradually disappeared.

[Extract from New Orleans Times-Democrat, March 4, 1906.]

Following a drizzling rain all during Friday afternoon, a premature darkness settled over Meridian shortly after 6 o'clock. * * * As described by eyewitnesses, the storm assumed the appearance of a lofty ball of fire as it swept along its pathway of destruction.

Meehan Junction, the first place damaged, is twelve miles southwest of the city. * * * The storm next struck the fertilizer plant, just below the city limits. * * *

In describing the storm it is said:

There was a great roaring like that made by a locomotive under heavy steam pressure and then came a shock like the meeting of heavy trains. Those on the outside claim that a cone of fire or "red glow" filled the center of the tornado, and all claim that the point of the inverted cone was so small and sharp that it could not have covered the full path of destruction.

An eyewitness says:

There was all the stillness and calm that precedes one of these horrible freaks of the elements. The humidity became almost unbearable. * * * A fine, drizzling rain prevailed during the day at Meridian. Late in the afternoon dark clouds hovered around the city and the humidity at times was rather severe. Shortly after 6:15 o'clock a terrible looking cloud could be observed bounding out of the southwestern horizon toward the city. This was followed by a downpour of rain; then with a rush and noise that struck terror, the tornado descended upon that portion of the city near the passenger depot.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

H. H. KIMBALL, Librarian.

The following titles have been selected from among the books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be loaned for a limited time to officials and employees who make application for them.

Aachen. Meteorologisches Observatorium.

Deutsches Meteorologisches Jahrbuch. 1904. 76 pp. 8°. Karlsruhe. 1906.

Agemennone, Giovanni.

La registrazione dei terremoti. 136 pp. 8°. Roma. 1906.

Arrhenius, Svante.

Die vermutliche Ursache der Klimaschwankungen. 10 pp. 8°. Uppsala. 1906.

Bulgaria. Central Meteorological Institute.

Tremblements de terre en Bulgarie. No. 5. . . 1904. viii, 283 pp. 8°. Sofia. 1905.

Coblentz, William W[eber].

Investigations of the infra-red spectra. v, 330 pp. 8°. Washington. 1905.

Conseil Permanent International pour l'Exploration de la Mer.

Einfluss des Windes auf die Dichte und die Bewegung des Meereswassers von J. W. Sandström. (Publications de circonstance No. 18.) 6 pp. 8°. Copenhagen. 1904.

Oberflächentemperaturmessungen in der Nordsee . . . von E. van Everdingen und C. H. Wind. (Publications de circonstance No. 14.) 10 pp. 4°. Copenhagen. 1904.

On the influence of the east Icelandic polar stream on the climatic changes of the Faroe Isles, the Shetlands and the north of Scotland. By Martin Knudsen. (General report on the work of the period July, 1902-July, 1904. Rapports et procès-verbaux. Vol. III. Edition anglaise. Appendix C.) 8 pp. 8°. Copenhagen. 1905.

On the probable occurrence in the Atlantic current of variations, periodical and otherwise, and their bearing on meteorological and biological phenomena, with an introduction by Otto Peetersson. (General report on the work of the period July, 1902-July, 1904. Appendix A.) x, 26 pp. 8°. Copenhagen. 1905.

Coimbra. Observatorio Meteorologico.

Observacoes meteorologicas et magneticas . . . 1901. viii, 152 pp. 8°. Coimbra. 1906.

Eiffel, Gustave.

Étude comparée des stations météorologiques de Beaulieu-sur-Mer (Alpes-Maritimes) Sèvres (Seine-et-Oise), Vacquey (Gironde) pour l'année 1904. vii, 156 pp. 8°. Paris. 1905.

Same. Atlas des planches. 12 plates. 8°. Paris. 1905.

Types généraux de comparaisons météorologiques appliqués à l'étude des stations de Beaulieu-sur-Mer (Alpes-Maritimes) Sèvres (près Paris) et Vacquey (Gironde) pour l'année 1905 (Premier semestre). 71 pp. 8°. Paris. 1905.

Flammarion, Camille.

Thunder and lightning. Translated by Walter Mostyn. 281 pp. 8°. Boston. 1906.

Greenwich. Royal Observatory.

Results of the magnetical and meteorological observations. 1903 v. p. 8°. Edinburgh. 1904.

India. Meteorological Department.

Rainfall of India. 1904. v. p. 8°. Calcutta. 1905.

Kharkov. University. Meteorological Observatory.

Results des observations . . . 1902. [Russian and French text.] 131 pp. 8°. Kharkof. 1905.

Pittman, Philip.

The present state of the European settlements on the Mississippi. . . An exact reprint of the original edition, London, 1770; edited, with introduction, notes, and index, by Frank Heywood Hodder. 165 pp. 8°. Cleveland. 1906.

Royal Society of Edinburgh.

Proceedings. Vol. XXIV. Sessions 1901-2, 1902-3. viii, 667 pp. 8°. Edinburgh. 1904.

Same. Vol. XXV. Sessions 1903-4, 1904-5. 1905. viii, 1259 pp. 8°. Edinburgh. 1906.